

80. Specific heat of glassy carbon at low temperature*

A. S. Vagh, B. Carton† and S. Mrozowski (*Carbon Research Laboratory, State University of New York at Buffalo, Buffalo, New York*). The specific heat of glassy carbon was investigated in the temperature range of 0.44–4.5°K. The specific heat follows a relation $C = \alpha T^3 + \gamma T$, with γ going through a maximum and α increasing with increase in heat-treatment temperature. On the average the cubic specific heat term is about the same as for soft carbons heat-treated to 1000–1200°C. In the lowest temperature range evidence of the presence of a specific heat peak below 0.44°K is obtained. The high temperature tail of this peak at first increases and subsequently disappears with increasing heat-treatment.

*Work supported by the National Science Foundation.

†NATO Fellow from the University of Nancy, France.

81. Low temperature specific heat of neutron irradiated glassy carbon*

S. Mrozowski, S. Orzeszko† and A. S. Vagh (*Carbon Research Laboratory, State University of New York at Buffalo, Buffalo, New York*). Glassy carbon heat-treated to 3000°C was neutron irradiated to various doses. In the He⁴ range of temperature, the coefficient γ increases fast with the dose, with α decreasing at the same time. The combined effect results in a surprising behavior of the specific heat at round 4.2°K, which decreases at first with the dose and then turns around going through a minimum. In the lowest temperature range (below 1°K), a peak located below 0.44°K develops with an increasing intensity. The general behavior is similar to the case of soft carbons‡ although the position of the peak is different. The implications of the results found and possible correlations with ESR will be discussed.

*Work supported by the National Science Foundation.

†On leave from Nicolas Copernicus University, Torun, Poland.

‡K. Kamiya, S. Mrozowski and A. S. Vagh, *Carbon* **10**, 267 (1972).

IV. SORPTION**82. Activated Carbon and Water Pollution Control (Plenary Lecture)**

W. J. Weber (*University of Michigan, Ann Arbor, Michigan*).

83. Surface unsaturation in microcrystalline carbons

B. R. Puri (*Department of Chemistry, Panjab University, Chandigarh, India*). Surface unsaturation in carbons arises from elimination of the acidic CO₂-complex and plays a dominant role in determining catalytic performance and chemical reactivity of microcrystalline carbons. Surface unsaturation can be enhanced on surface oxidation followed by evacuation of carbons.

84. Interaction of ozone with adsorbent charcoal

V. R. Deitz and J. L. Bitner (*Naval Research Laboratory, Washington, D.C.*). The ozone-charcoal reaction at ambient temperature was followed by ultra-violet absorption for O₃ and by infra-red for CO₂. The gasification was significantly retarded as the calculated monolayer of oxygen atoms was approached. One O atom from O₃ accounted for the mass balance in the overall reaction. No catalytic decomposition of ozone by the charcoal was indicated. A reaction mechanism is suggested that accounts for most of the observed behavior.

85. Properties and reactivity of heat-treated carbon

D. Rivin and R. G. True (*Cabot Corporation, Billerica, Massachusetts*). Surface group stabilities and pyrolysis products were determined for a series of furnace blacks heat-treated at temperatures between 300°C and 1500°C. Subsequent exposure to hydrogen, oxygen and carbon dioxide atmospheres at 30°C caused substantial changes in surface chemistry and under certain conditions, a large increase in apparent surface area. These phenomena are interpreted in terms of surface microstructure.

86. Carbon molecular sieve for the concentration of oxygen from air

S. P. Nandi and P. L. Walker, Jr. (*Department of Materials Sciences, Pennsylvania State University, University Park, Pennsylvania*). The micropore system of HVC and sub-bituminous coals can be modified by